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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,139	12/01/2003	Justin Sato	03-0469	2655
24319	7590	02/10/2006	EXAMINER	
LSI LOGIC CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035			DESTA, ELIAS	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,139	SATO ET AL.	
	Examiner	Art Unit	
	Elias Desta	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) .
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim rejection – 35 U.S.C. 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-6 are rejected under 35 U.S.C. 101 for lack of patentable utility. The outcome in claim 1 does not constitute a tangible result. For instance, ‘calculating a value based on an RF signal and then integrating the calculated value over a period of time to determine effects of a predetermined parameter’ is not a tangible result because the outcome is not realized as a monitoring, controlling or any other tangible output that would provide a utility. The claim is a mathematical algorithm that uses real-life input data to study a value that would have an effect on a predetermined parameter rather than an action to characterize a system. Therefore, the claim is non-statutory.

One possible tangible result if it is supported by the specification would be displaying the integrated result; see State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. “The purpose of this requirement is to limit patent protection to inventions that possess a certain level of “real world” value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148

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USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993))”.

Claim rejection – 35 U.S.C. 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) The invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-6 are rejected under 35 U.S.C. 102(a) as anticipated by Coumou (MKS Instruments, ‘Advanced RF Metrology for Plasma Process Control’)

In reference to claim 1: Coumou teaches the method of analyzing plasma in semiconductor manufacturing (see Coumou, page 1, paragraph 1 and Fig. 1). The method includes:

- RF power deliver to the plasma constitute exciting the plasma with an RF signal because it is inherent to say that the RF power deliver to the plasma chamber is to ignite the plasma for the purposes of analyzing the plasma (see Coumou, page 1, paragraph 2, last sentence and Fig. 1);
- Monitoring the RF signal as the RF signal is used to ignite the plasma (see Coumou, page 2, paragraphs 1-4, under RF signal processing and Fig. 2);

- Calculating a value based on the RF signal, because the principal RF metrology includes an optimization process which involves calculating a value such as dynamic range and other parameters (see Coumou, page 2, paragraph starting “Principal RF metrology design challenges”); and
- Integrating the calculated value over a period of time to determine effects of a pre-determined parameter is inherently included in Coumou, because the advanced signal processing scheme used in Coumou implements a CIC (Integrator Comb Filter) where the low pass filter extracts the sum frequency and any other undesirable frequencies that may be contained in the spectrum. Further, a DSP acquired the data from the data channel through a parallel interface, converts the complex data from the Cartesian to Polar coordinates, and applies a scaling algorithm to convert the measured values or parameters to equivalent RF values (see Coumou, page 4, Fig. 4 and RF Metrology Results).

With regard to claim 2, Coumou further teaches that the method includes an RF signal monitor to monitor the RF signal (see Coumou, page 4, 1st paragraph), calculate the value and integrate the calculated value (CIC filter, low pass filter and Cartesian to polar coordinate conversion achieves the objective) (see Coumou, page 4, Fig. 4 and page 5, Fig. 5).

With regard to claims 3-5: Coumou further teaches that the method uses the integrated value to calculate the etch rate, because by controlling and monitoring the actual plasma impedance and RF power delivered to the plasma contribute the parameter required to compute the etch rate (see Coumou, page 1, 2nd paragraph), etch chamber condition, pressure, flow and gap spacing associated with the etch chamber since these values are considered metrological data (see Coumou, page 4, 'RF Metrology Results').

With regard to claim 6: Coumou further teaches that the method includes integrating a plurality of parts of the RF signal because the CIC filter is configured right after digital complex multiplexers (see Coumou, page 4, Fig. 4).

Conclusion

5. Citation of pertinent prior art:

- a. Babiker et al. (IEEE Article, 'Complete Monte Carlo RF Analysis of "Real" Short-Channel Compound FET's') teaches a comprehensive RF analysis technique based on ensemble Monte Carlo (EMC) simulation of compound FET's with realistic device geometry.
- b. Delp et al. (U.S. PAP 2005/0199341) teaches method and system for analyzing data from plasma process.
- c. Mahoney et al. (U.S. PAP 2005/0011611) teaches wafer probe for measuring plasma and surface characteristics in plasma processing environments.

- d. Lie et al. (U.S. PAP 2003/0038112) teaches optical monitoring and control system and method for plasma reactors.
 - e. Khargonekar (UOM Publication, 'Intelligent Electronics Manufacturing: Modeling and Control of Plasma Processing') teaches sensor modeling, signal processing and control for general strategy of plasma process control.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214. The examiner can normally be reached on M-Th (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elias Desta


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- e.d

January 30, 2006


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800